

Cleaning Up after the Log Drivers' Waltz : Finding the Ottawa River Watershed

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Résumé de l'article

Qu'il s'agisse du commerce du bois, de l'hydroélectricité ou des manufactures de pâtes et papiers, les activités industrielles menées sur la rivière des Outaouais ont toutes eu des impacts environnementaux. Chacune de ces activités, de même que le rejet des eaux usées dans la rivière, a fait l'objet de contrôles juridiques et réglementaires. Dans cet article, l'auteur analyse l'approche sectorielle ayant prévalu en matière de protection de la qualité de l'eau et il note, en conclusion, certaines tentatives récentes visant à instaurer un cadre global et cohérent, qui tiendrait compte des bassins versants.

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Cleaning Up after the Log Drivers' Waltz : Finding the Ottawa River Watershed

Jamie BENIDICKSON*

The Ottawa River has experienced the environmental impact of a succession of industrial uses from the lumber trade through hydroelectric power development to pulp and paper manufacturing. Each of these activities, and the introduction of substantial discharges of urban wastewater, has been the subject of legal intervention and regulatory controls. The present paper surveys this largely sectoral approach to water quality protection along the Ottawa River and notes in conclusion tentative steps being taken to formulate a more comprehensive and coherent framework on a watershed basis.

Qu'il s'agisse du commerce du bois, de l'hydroélectricité ou des manufactures de pâtes et papiers, les activités industrielles menées sur la rivière des Outaouais ont toutes eu des impacts environnementaux. Chacune de ces activités, de même que le rejet des eaux usées dans la rivière, a fait l'objet de contrôles juridiques et réglementaires. Dans cet article, l'auteur analyse l'approche sectorielle ayant prévalu en matière de protection de la qualité de l'eau et il note, en conclusion, certaines tentatives récentes visant à instaurer un cadre global et cohérent, qui tiendrait compte des bassins versants.

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Although lawyers must acknowledge sophisticated debate concerning the nature of ecosystems and watersheds¹, we may observe that important contemporary efforts to safeguard or restore major water systems are broadly oriented towards the challenge of incorporating sound ecological principles within institutional frameworks corresponding to watershed communities². The failure to “think like a watershed”—a challenge that is corollary to Aldo Leopold’s celebrated injunction that humanity should “think like a mountain”—comes at a high price³.

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1. James M. OMERNIK and Robert G. BAILEY, “Distinguishing between Watersheds and Ecoregions”, *Journal of the American Water Resources Association*, vol. 33, No. 5, October 1997, p. 935.
 2. For background discussion, see POLIS PROJECT ON ECOLOGICAL GOVERNANCE, *At a Watershed. Ecological Governance and Sustainable Water Management in Canada*, by Oliver M. BRANDES and others, Urban Water Demand Management Program, Victoria, University of Victoria, May 2005, [Online], [www.polisproject.org/PDFs/AtaWatershed.pdf] (11 June 2010).
 3. Disturbing discussion of current and anticipated developments is widespread. See for example: WORLD WATER ASSESSMENT PROGRAMME, *The United Nations World Water Development Report 3. Water in a Changing World*, Paris, UNESCO, 2009, [Online], [www.unesco.org/water/wwap/wwdr/wwdr3/tableofcontents.shtml] (12 June 2010); Ken CONCA, *Governing Water. Contentious Transnational Politics and Global Institution Building*, Cambridge, MIT Press, 2006, chap. 3 “Pushing Rivers Around: the Cumulative Toll on the World’s Watersheds and Freshwater Ecosystems”, p. 73 ff.; Peter H. GLEICK, “China and Water”, in P.H. GLEICK and others (eds.), *The World’s Water 2008-2009. The Biennial Report on Freshwater Resources*, Washington, Island Press, 2009, chap. 5, p. 79 ff., [Online], [www.worldwater.org/data20082009/ch05.pdf] (17 June 2010); Jacques LESLIE, *Deep Water. The Epic Struggle over Dams, Displaced People, and the Environment*, New York, Picador, 2005; Robert W. SANDFORD, *Restoring the Flow. Confronting the World’s Water Woes*, Surrey, Rocky Mountain Books, 2009.

The nature of watershed thinking—simultaneously social, legal and scientific—has been extensively discussed⁴. It calls for an integrated appreciation of watersheds in conjunction with human communities in contrast to the generally fragmented understanding that has emerged from historic decisions reflecting sectoral and generational preferences.

The present condition of the Ottawa River is the cumulative result of commercial, industrial and technological intervention on a waterway that was reduced to less than the sum of its parts by local, provincial and national decisions that echo the social, legal and scientific assumptions of their age. With reference to legislative and institutional measures intermittently advanced to facilitate preferred uses or to forestall deterioration, this essay briefly surveys the transformation of the Ottawa River from its pre-industrial state⁵. Earlier opportunities to implement more comprehensive approaches have been missed, but several recent initiatives, more watershed oriented in nature, have begun to emerge in the Ottawa River context.

From its origins in the Laurentian mountains of Québec, the Ottawa River flows westwards to Lake Temiskaming, before turning southeastwards towards the national capital region en route to the St. Lawrence at Montréal. With a total length of over 1200 kms, the Ottawa—together with such important tributaries as the Coulonge, Dumoine, Gatineau, Madawaska, Mattawa and Rideau Rivers—drains a basin of nearly 150,000 km².

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4. One example is associated with “integrated water resources management”. As explained in Agenda 21, “[i]ntegrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization [...] In developing and using water resources, priority has to be given to the satisfaction of basic needs and the safeguarding of ecosystems.” *Report of the United Nations Conference on Environment and Development*, U.N. Doc. A/CONF.151/26/Rev.1 (vol. I) (3-14 June 1992), Annex II “Agenda 21”, ¶ 18.8. For some indication of the legal implications of the watershed approach, see: Robert W. ADLER and Michele STRAUBE, “Watersheds and the Integration of U.S. Water Law and Policy: Bridging the Great Divides”, (2000-2001) 25 *Wm. & Mary Env'tl. L. & Pol'y Rev.* 1; Jon CANNON, “Choices and Institutions in Watershed Management”, (2000-2001) 25 *Wm. & Mary Env'tl. L. & Pol'y Rev.* 379; A. Dan TARLOCK, “Putting Rivers Back in the Landscape: The Revival of Watershed Management in the United States”, (1999-2000) 6 *Hastings W.-Nw. J. Env'tl. L. & Pol'y* 167.
 5. For a broadly comparable U.S. study, see Joel A. TARR, “Land Use and Environmental Change in the Hudson-Raritan Estuary Region, 1700-1980”, in J.A. TARR (ed.), *The Search for the Ultimate Sink. Urban Pollution in Historical Perspective*, Akron, University of Akron Press, 1996, p. 36.

1 The Early Alterations

Aboriginal and fur trade use of the Ottawa involved minimal impact on stream flow and water quality. Indeed, aspects of the pre-industrial landscape, including beaver dams, would today be understood as ecological services that contribute positively—through filtration—to the river’s health⁶. Yet soon after Philemon Wright ran his first square timber raft downstream to transport white pine to the British export market in 1806, transformative changes began.

Timber trade alterations or “improvements” to the Ottawa’s flow included canals such as those opened in the 1830s alongside the Carillon Rapids, Chute à Blondeau and Long Sault and diversion dams such as the Chaudière to power grist and saw mills following the arrival of the water-turbine in the 1840s. Introduced by Ruggles Wright in 1829, the timber slide vastly extended the timber trade to the upper Ottawa valley justifying substantial investments in forest exploitation⁷. Such chutes facilitated timber drives at Chats Falls (1835), Portage du Fort (1839), Calumet Falls (1843) and Rapides des Joachims (1844), among other locations⁸. Direct impacts on flows were positively assessed from the perspective of economic return.

Mid-nineteenth century observers also viewed water quality favourably. Thus, in 1854, T.C. Keefer, a consulting engineer, compared the Ottawa and St. Lawrence Rivers as sources of drinking water supply for his Montréal clients. Both waters, he began, “may be drank with impunity by persons who are immediately and severely affected by the water now supplied to this city”. But the “softer,” though sherry-coloured, Ottawa was “the most valuable for public use”. Reports that shad and salmon were less

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6. Evelyn C. PIELOU, *Fresh Water*, Chicago, University of Chicago Press, 1998, chap. 10 “Wetlands”, p. 214 ff.; Alice OUTWATER, *Water. A Natural History*, New York, Basic Books, 1996, chap. 2 “Nature’s Hydrologists”, p. 19 ff.
 7. For discussion of the timber drive, see: PARKS CANADA, *The Timber Trade in the Ottawa Valley, 1806-54*, by Sandra J. GILLIS, Report No. 153, Ottawa, National Historic Parks and Sites Branch, 1975, p. 155-175. For a detailed discussion of “improvements”, see *id.*, p. 255-299.
 8. ONTARIO MINISTRY OF NATURAL RESOURCES, *Review of the Historical and Existing Natural Environment and Resource Uses on the Ottawa River*, by Tim HAXTON and Don CHUBBUCK, Technical Report No. 119, Science and Information Resources Division, Ottawa, Queen’s Printer, 2002, p. 6, [Online], [ottawariverkeeper.ca/files/tim_haxton_report.pdf] (18 June 2010).

inclined to ascend the St. Lawrence also constituted “an argument in favour of the superior purity of the Ottawa⁹”.

However, the waters of the Ottawa were already experiencing the impacts of stream modification, direct discharges from numerous sources, and land use impacts.

2 The Sawdust Menace and Forest Industry Operations

Mill refuse, including sawdust, bark and slabs, interfered with nineteenth-century stream flow and navigation. As Richard Cartwright, MP, graphically explained, manufacturers near the nation's capital annually produced roughly 10,000,000 cubic feet of lumber. This level of industrial activity resulted in 2,000,000 cubic feet of rubbish. Generally dispatched directly to the river, the lumber mill waste was “sufficient to block up the river for four miles, to a width of 200 feet, and a depth of one foot¹⁰”. Severe accumulations along the Ottawa following Confederation in 1867 inspired federal legislation to prohibit lumber mills from disposing of such wastes in navigable streams or rivers.

Legislation intended to prohibit the discharge of mill waste provoked Ottawa lumbermen to protest. They cited devastating economic impacts and argued that annual spring freshets eliminated adverse effects on navigation¹¹. To investigate the controversy, federally-appointed commissioners gathered evidence. Dr. E. Van Cortland, the city of Ottawa's health officer, criticized the threefold impact of lumber mill refuse on spawning grounds, on navigation and on public health. Notwithstanding limitations in the scientific foundations on which it rested, this was a rare early attempt to consolidate a range of community concerns over industrial interference

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9. Thomas C. KEEFER, *Report on a Preliminary Survey for the Water Supply of the City of Montréal*, Montréal, John Lovell, 1854, *Appendix* quoted in Toronto Board of Works, *Report of the Board of Works with Report of the City Engineer on City Sewerage* (Toronto, 1857) p. 84-85. Later assessments considered the colour of the Ottawa River water more problematic. See CANADA, BUREAU OF MINES, *Industrial Waters of Canada: Report on Investigations, 1934 to 1940*, by Harald A. LEVERIN, Ottawa, Department of Mines and Resources, Mines and Geology Branch, 1942, p. 48 and 49.
 10. CANADA, *House of Commons Debates*, 4th sess., 1st Parl., 28 February 1871, “Protection of Navigable Waters”, p. 73 (Richard Cartwright).
 11. Pollution by the Ottawa lumber industry eventually became a classic illustration of the enforcement challenges facing environmental regulators. See CANADA, DEPARTMENT OF JUSTICE, *From Sawdust to Toxic Blobs. A Consideration of Sanctioning Strategies to Combat Pollution in Canada*, by Duncan CHAPPELL, Ottawa, Minister of Supply and Services Canada, 1988. On the forest industry generally, see Chad GAFFIELD, “The Golden Age of the Forest Economy”, in C. GAFFIELD (ed.), *History of the Outaouais*, Sainte-Foy, Institut québécois de recherche sur la culture, 1997, chap. 6, p. 153 ff.

with water quality. But mill owners threatened loss of employment if they were forced to abandon water-power technology in favour of steam and presented engineering studies to debunk their critics¹².

Simple observation discredited saccharine theory. Travelling from Lachine up past the Grenville Rapids and Hawkesbury to the capital, the commissioners encountered numerous waste deposits, some extending “*wholly across the river*”¹³. At the lock beneath Colonel By’s Rideau Canal, logs, square timber and other debris thoroughly blocked up the bay¹⁴.

Passed in 1873, the federal statute prohibited the discharge of mill waste, including sawdust, into navigable waterways¹⁵. But J.R. Booth, whose vast commercial ventures in the white pine trade would eventually earn him recognition as a “lumber king,” refused to bring his Chaudière mill into compliance. He preferred instead to pay a twenty dollar penalty when, in 1875, he became the first subject of enforcement action¹⁶. Facing possible further prosecutions, and perhaps ultimately injunction proceedings almost all of the Ottawa Valley mill owners completed renovations (not always including the removal of sawdust and grindings) by the end of the decade and obtained exemptions from the act by order in council 23 June 1880¹⁷.

Exemptions had been explicitly anticipated by the legislation although the onus lay on the lumbermen to satisfy the Governor-in-Council that the “public interest would not be injuriously affected”¹⁸. These arrangements for subordinating a collective environmental interest to industrial convenience embodied the type of shortcomings in environmental protection legislation that continue to attract severe criticism today: a limited conception of the public interest, broad administrative discretion, and the absence of effective mechanisms to facilitate community participation in decision-making.

12. CANADA, PARLIAMENT, “Report on the Commission Appointed to Enquire into the Condition of Navigable Streams”, by Hamilton H. KILLALY, *Sessional Papers*, 1st sess., 2nd Parl., vol. 6, No. 29, 1873, p. 8 [hereinafter “Killaly Report”].

13. *Id.*, p. 14.

14. *Id.*, p. 12.

15. *An Act for the Better Protection of Navigable Streams and Rivers*, S.C. 1873, c. 65, s. 1.

16. John P.S. McLAREN, “The Tribulations of Antoine Ratté: A Case Study of the Environmental Regulation of the Canadian Lumbering Industry in the Nineteenth Century”, (1984) 33 *U.N.B.L.J.* 203, 221.

17. *Id.* and R. Peter GILLIS, “Rivers of Sawdust: The Battle over Industrial Pollution in Canada, 1865-1903”, *Journal of Canadian Studies*, vol. 21, No. 1, Spring 1986, p. 84, at pages 90 and 91.

18. *An Act for the Better Protection of Navigable Streams and Rivers*, *supra*, note 15, s. 4.

Exempt from prosecution under the federal statute, the lumbermen were by no means immunized from private litigation. Indeed, one judge described them as “wrongdoers, who from their mills allow sawdust, blocks, chips, bark, and other refuse to fall into the River Ottawa¹⁹”. Not only was water fouled and rendered offensive to taste and smell, but gas generated under water produced “frequent explosions which are disagreeable and sometimes dangerous²⁰”.

Lumber waste was equally a concern at the provincial level. Thus, in the early 1880s, Ontario public health officials solicited information from municipal authorities about adverse health impacts associated with sawdust disposal. Local officials were also asked to describe measures undertaken by fishery inspectors to prevent pollution and to report on any indications of compliance²¹.

In time, the Ontario Provincial Board of Health would exert an extraordinary influence over matters such as these. In their first encounter with the Ottawa Valley lumber trade, however, public health officials were out-manœuvred. Threatened with possible court orders against their operations, mill owners sought legislative protection. In 1885, in an arrangement reminiscent of the earlier federal exemption, Premier Mowat's provincial government immunized operators of saw mills who threw sawdust and refuse into the Ottawa River from actions for injunctions when the Lieutenant Governor determined that the public interest so required. In an action for an injunction against the owner or occupier of an Ottawa River mill site, arising from dumped sawdust or other mill waste, the courts were instructed to “take into consideration the importance of the lumber trade to the locality wherein such injury, damage or interference takes place, and the benefit and advantage, direct and consequential, which such trade confers on the locality and on the inhabitants thereof, and shall weigh the same against the private injury, damage or interference complained of”. Ontario legislators clearly wished to deter the courts from impeding a major and productive resource industry²². This striking statutory intervention

19. *Booth v. Ratté* (1890), 15 App. Cas. 188, 190 (P.C.); (1887) 14 O.A.R. 419 (C.A.); (1886) 11 O.R. 491 (H.C.J. Ch.D.); (1885) 10 O.R. 351 (H.C.J. Ch.D.).

20. “Farmer Drowned”, *The Ottawa Citizen*, 12 November 1897.

21. ONTARIO, PROVINCIAL BOARD OF HEALTH, *Sawdust Survey from the Provincial Board of Health to Municipalities*, by Peter H. BRYCE, Scrapbooks, Item 32, RG62, Series B4, Ottawa, Archives of Ontario, 1884.

22. *An Act Respecting Saw Mills on the Ottawa River*, S.O. 1885, c. 24, s. 1 (1); *The Globe*, 24 March 1885, p. 5; reference to federal concern with lumber refuse as an interference with navigation may be found in PARKS CANADA, *The Rideau Canal. Defence, Transport and Recreation*, by Judith TULLOCH, National Historic Parks and Sites Branch, Ottawa, Minister of Supply and Services Canada, 1981, p. 25.

using a crude version of cost-benefit analysis that was restricted to private considerations privileged the status of the Ottawa River as an industrial corridor over preservation of its natural state and functions.

Despite provincial legislation to discourage injunctions against lumber mills, the controversy, including its Ottawa River dimensions, persisted at the national level, as the harmful effects of sawdust on marine and aquatic life became more fully appreciated. In 1889 a federal Fisheries official explained that floatability allowed the “blasting influences” of the sawdust scourge to spread downstream, even in some instances to vulnerable estuaries, small inlets and bays. Here it “kills the sources which give life and food for the smaller races of insects and other marine animals”, and as it settled, “forms a compact mass of pollution all along the bottoms and margins of the rivers and inlets, filling up the crevices on the gravel beds, and among stones, where aquatic life is invariably produced and fed”. Sawdust, described as “a fixed, imperishable foreign matter”, eventually produced “a long, continuous mantle of death²³”. These cumulative consequences, in all but name, were ecological. Yet it remained to be seen how concerns of this nature might be addressed within the established legal framework.

Ottawa’s constitutional responsibility for navigation appeared in the late nineteenth century somewhat more robust than its ostensible authority in relation to fisheries, and so, in 1886, the sawmill provision was rewritten with reference to the firmer constitutional foundations: “No owner or tenant of any saw-mill, or any workman therein or other person shall throw or cause to be thrown, or suffer or permit to be thrown, any sawdust, edgings, slabs, bark or rubbish of any description whatsoever, into any river, stream or other water any part of which is navigable, or which flows into any navigable water²⁴.”

With a flourish, that final phrase—flows into any navigable water—asserted the sweeping extent of federal concern. However, the possibility of exemptions had been preserved.

23. CANADA, PARLIAMENT, “Annual Report of the Department of Fisheries, Dominion of Canada, for the Calendar Year 1889”, *Sessional Papers*, 4th sess., 6th Parl., vol. 12, No. 17, 1890, p. 17, quoted in Gilbert ALLARDYCE, “‘The Vexed Question of Sawdust’: River Pollution in Nineteenth Century New Brunswick”, *The Dalhousie Review*, vol. 52, No. 2, Summer 1972, p. 177, at page 178, reproduced in Chad GAFFIELD and Pam GAFFIELD (eds.), *Consuming Canada: Readings in Environmental History*, Toronto, Copp Clark, 1995, p. 120.

24. *An Act Respecting the Protection of Navigable Waters*, S.C. 1886, c. 36, s. 7.

There was little evidence of support for vigorous enforcement against the lumber mills from higher reaches of government. Even Prime Minister John A. Macdonald, oblivious to any inter-relationship between forest health, water quality and fish habitat, remarked that forestry and the fishery should each take their turn: when all the trees were cut along the river, it could then be restocked with fish²⁵. It was not until 1894 that legislation to eliminate discretionary exemptions was finally approved by Parliament²⁶.

The announcement that exemptions would expire in May 1895 was certainly not welcomed by the trade. As Hiram Robinson of the Hawkesbury Lumber Company explained, his extensive mills, located on the Longue Sault rapids about sixty miles below Ottawa, employed eight hundred men. It was practically impossible to save sawdust and smaller refuse, Robinson insisted, owing to the very low head of fall and some back water, during the running season, as a result of which "the wheels and machinery are very much submerged²⁷". Robinson estimated the cost of replacing the installed works with steam powered facilities at between 375,000 and 425,000 dollars, not including the loss of the value of the current mills and the costs associated with shutting down for the construction. To ground a jurisdictional challenge, Robinson explained that since his mill was located alongside a long rapid, no steamers or barges utilized the channel. Consequently, "no damage has been done to Navigation or to settlers, or people in any way²⁸". This was a highly localized vision of the Ottawa and one that viewed the water power as an essentially private utility.

In 1899 prosecutions were finally launched to encourage compliance, but over a three year period J.R. Booth secured further indulgences, ostensibly to complete conversion of his lumber mill into a pulp plant utilizing sawdust as fuel. On September 11, 1901 the prosecutorial arm of the department of justice finally obtained a conviction and another twenty dollar fine. Prime Minister Wilfrid Laurier was then instrumental in securing Booth's firm commitment to cease dumping sawdust after the 1902 season in exchange for relief from further prosecutions and the threat of injunction proceedings²⁹.

25. R. GILLIS, *supra*, note 17, at page 94.

26. J.P.S. McLAREN, *supra*, note 16, 233, at footnote 148; R. GILLIS, *supra*, note 17, at pages 93-95.

27. Letter from Hiram ROBINSON, Managing Director, to Sir Charles Tupper, 10 August 1894, Hawkesbury Lumber Company Papers, Archives of Ontario.

28. Letter from Hiram ROBINSON, Managing Director, to J.R. Booth, 18 September 1901, Hawkesbury Lumber Company Papers, Archives of Ontario.

29. R. GILLIS, *supra*, note 17, at page 100.

2.1 Pulp and Paper

Booth was not alone in anticipating the Ottawa forest industry's shift from lumber to pulp and paper production consuming spruce rather than the declining supplies of pine. The opening of E.B. Eddy's mechanical pulp mill in Hull in 1886 ushered in a new era in water quality, for residues from the chemical pulping process introduced in 1889 and paper making begun in 1890, as well as suspended wood fibres imposed severe demands on the river³⁰. The early twentieth century witnessed dramatic expansion in the sector, particularly following the arrival of the Canadian International Paper Company in 1925³¹.

The pulp and paper industry was indeed a source of controversy, but public attention focussed largely on the terms of pulpwood concessions and associated hydroelectric power facilities during the first half of the twentieth century³². To the extent that industrial river pollution was of concern to Ontario government officials during the interwar years, efforts were made to resolve conflicts informally, or to downplay environmental impacts in comparison with the benefits of resource extraction and employment³³.

When the environmental consequences of pulp and paper operations became the subject of scientific research and policy deliberations during the 1950s, attention was initially directed towards biological oxygen demand (BOD), that is, the extent to which organic waste materials consumed oxygen during decomposition with the result that less was available to sustain fish habitat or for other natural requirements³⁴. A snapshot for 1959-1960 indicates that 120 million feet of wood, seventy per cent consisting of spruce and balsam, was cut on the Québec side of the watershed. The Ottawa River itself and the Gatineau River contributed 24 million cubic feet and 14 million cubic feet respectively. The consequences of newsprint production from one mill alone resulted in annual discharges to the Ottawa

30. See Odette VINCENT-DOMEY, "Industry and the World of Work", in C. GAFFIELD (ed.), *supra*, note 11, p. 257, at pages 260-276, for the evolution of the regional pulp and paper industry.

31. John H. DALES, *Hydroelectricity and Industrial Development. Québec 1898-1940*, Cambridge, Harvard University Press, 1957, p. 145-150.

32. Henry V. NELLES, *The Politics of Development. Forests, Mines & Hydroelectric Power in Ontario, 1849-1941*, 2d ed., Montréal, McGill-Queen's University Press, 2005; Christopher ARMSTRONG, *The Politics of Federalism: Ontario's Relations with the Federal Government, 1867-1942*, Toronto, University of Toronto Press, 1981.

33. Jamie BENIDICKSON, *The Culture of Flushing. A Social and Legal History of Sewage*, Vancouver, UBC Press, 2007, p. 262-264.

34. ONTARIO WATER RESOURCES COMMISSION, *Pulp and Paper Records*, "The Industrial Waste Situation in Ontario", Conference on Water Quality Management, RG 84-12, Ottawa, Archives of Ontario, 1961.

of 7,000 tons of fibres and 20,000 tons of bark. On a daily basis one million gallons of sulphite liquor were being introduced to the waterway³⁵.

Industrial waste management, including pulp and paper operations, proceeded slowly along the policy-making agenda, generally in the form of guidelines, and with the encouragement of such newly-formed agencies as the Ontario Water Resources Commission. Industry-wide approaches were encouraged and remedial measures were promoted, however, on the more or less explicit understanding that waste removal was an important natural function of waterways. Thus, having reported on a range of responses to water pollution, including the formation of a committee of mill operators in the Ottawa Valley, a senior industry representative firmly articulated his perspective:

It is common knowledge among those whose duty it is to control and protect our natural waters that some degree of waste disposal is inevitable if our present form of society is to continue.... Nor is this necessarily a bad thing. [L]arge bodies of natural waters such as we have in many parts of Canada—are capable of absorbing relatively large amounts of waste without harm. The proper use of this capacity of our natural waters is just as essential to the prosperity and development of our country and our industry as the proper use of our forests, our land and our mineral deposits³⁶.

A decade after this presentation, in 1971, high concentrations of suspended solids and related sludge deposition were reported downstream from the Kipawa mill of the Canadian International Paper Company in Temiscaming, the Hull mill of the E.B. Eddy Company, and the Canadian International Paper Company mill at Gatineau. The Masson mill of the James MacLaren Company, the Thurso mill of the Thurso Pulp and Paper Company, the Hawkesbury mill of the Canadian International Paper Company, and the Consolidated Bathurst Company mill at Pontiac were responsible for lesser impacts³⁷.

Pulp and paper had replaced lumbering as the primary source of pressure on water quality along the Ottawa. Overall this sector was responsible

35. Gustave PRÉVOST, "A Typical Drainage Basin: The Ottawa River", in *Resources for Tomorrow*, Conference held in Montréal, 23-28 October 1961, supp. vol. "Background Papers", Ottawa, Queen's Printer, 1962, p. 83, at pages 101-103.

36. W.H. PALM, President, Hinde and Dauch, Address delivered at the Conference on Co-ordinated Pollution Control, RG84-12, TBE 193, Ottawa, Ontario Archives, 1960, p. 11.

37. ONTARIO WATER RESOURCES COMMISSION / QUÉBEC WATER BOARD, *Ottawa River Basin. Water Quality and its Control in the Ottawa River*, vol. 1, Toronto, Ontario Water Resources Commission, 1971, p. 5 [hereinafter "Ottawa River Basin"]. Mercury discharges from two mills contaminated fish populations and resulted in the closure of commercial fisheries downstream from the Chaudière dam in 1970.

for discharging approximately 190 tons per day of suspended solids. Additional discharges of organic wastes substantially reduced oxygen levels in the river with a five day BOD of over 1 million pounds. The pulp and paper sector continued to champion the timber drive (e.g. the Gatineau) as a key component of its successful operation, for the river was “a tireless worker, [...] 24 hours per day, seven days per week, suffers no mechanical breakdowns, conserves energy and causes no air pollution³⁸”.

The pulp and paper sector was also a primary user of the hydroelectric power potential of the Ottawa Valley, again resulting in environmental impacts that fell outside the scope of contemporary regulatory oversight³⁹.

2.2 Hydroelectric Power Production

The Booth, Bronson, and Eddy interests vigorously contested water power sites along the Ottawa from the late 19th century, eventually transitioning to hydroelectric power production. Prospects for hydro development were encouraged⁴⁰, but interprovincial agreements and storage facilities were eventually required to stabilize the framework for investment and production⁴¹. Some hydro dams such as Chats Falls and the Bryson generating station date from the interwar years, a period of significant economic consolidation as the Gatineau Power Company, a subsidiary of International Paper, acquired numerous smaller operations along tributary waterways in the lower Ottawa valley. In the same era (particularly between 1926 and 1931), Gatineau Power, pursuant to an agreement with the Québec Streams Commission, developed major reservoirs on the Gatineau River to enhance future hydro production⁴².

A further flurry of construction followed a 1943 agreement between Ontario and Québec to allocate undeveloped water power sites along the Ottawa River itself. This wave of activity included generating stations at Des Joachims (begun in 1946 and completed in 1950), Chenaux (begun in 1948 and operational in 1951), and La Cave where the Otto Holden Dam was built between 1948 and 1952. The Carillon Generating Station came

38. Nicolle BAIRD and GIGNAC, “Water in Action : Using Rivers for Work and Play”, Address delivered at the NCC Conference Presentation, 10 June 1987, p. 7 and 8 [unpublished manuscript in possession of the author].

39. These impacts include habitat destruction, flooding, siltation, and interference with seasonal flows and related natural functions.

40. CANADA, DEPARTMENT OF THE INTERIOR, *Water Powers of Canada. The Province of Ontario*, by Henry G. ACRES, Ottawa, Dominion Water Power Branch, 1915, p. 13 and 14.

41. O. VINCENT-DOMEY, *supra*, note 30, at page 267.

42. J. DALES, *supra*, note 31, p. 146-148.

into operation in 1964. Facilities of this nature, if they do not contribute directly to increased pollution loads on the river, substantially alter the river's restorative capacity and habitat quality because of their impact on current, the deposition of suspended materials, and so on.

The potentially significant official initiative towards an integrated institutional perspective on the Ottawa watershed emerged from the desire for co-ordination within the hydroelectricity sector. However, references to integrated watershed management in the policies of the Ottawa River Regulation Planning Board are essentially confined to the interests of hydroelectric power producers in the major storage reservoirs of the basin⁴³.

In addition to resource use and industrial activity along the Ottawa watershed, the development of settlements, urbanization and associated land uses resulted in significant ongoing environmental changes whose cumulative effects largely escaped regulatory review.

3 Urbanization

As they developed throughout the Ottawa Valley, numerous centres of population outgrew well-based water supply systems and turned to the Ottawa or tributary rivers. For Arnprior (1901), Hawkesbury (1903), Pembroke (1893), Hull (1885) and the national capital (1874), the Ottawa itself furnished municipal water for residential, commercial and fire-fighting purposes. Gatineau Point (1901) and Gracefield (1911) drew on the Gatineau River, with other communities taking advantage of nearby surface sources: Carleton Place (1915, Mississippi); Renfrew (1897, Bonnechère); Buckingham (1892, Lièvre). At approximately the same time, these communities introduced wastewater systems discharging household sewage and industrial waste back into the flow.

In the nation's capital, a singularly unhealthy set of circumstances had arisen following the introduction of a piped municipal supply and sewerage during the 1870s. The bacteriological threat to water quality was not even understood however at the time this infrastructure was put in place.

In an extensive commissioned study, Allen Hazen assessed the Ottawa River as "in many respects a magnificent supply"⁴⁴, given its catchment area and storage capacity. Yet he firmly urged the city to install water treatment facilities if supply was to be drawn from the River: sewage pollution,

43. OTTAWA RIVER REGULATION PLANNING BOARD, [Online], [www.ottawariver.ca] (6 July 2010).

44. OTTAWA CITY COUNCIL, *Report Improvement of the Ottawa Water Supply*, by Allen HAZEN, Ottawa, 5 October 1910, p. 38.

still limited in comparison with other rivers, “is already sufficient so that the water cannot be used in its raw state with confidence, and is steadily increasing⁴⁵”. An alternative source, McGregor Lake in the Gatineau Hills, offered water “of excellent quality⁴⁶”.

By 1913, another consultant’s report recommended that Ottawa should disregard the river and draw its water across the inter-jurisdictional divide from sources in Québec’s Gatineau Hills⁴⁷. Provincial and federal statutes were enacted to facilitate the project, including provincial legislation providing service to Hull and other Québec municipalities if Ottawa chose to tap Gatineau Hills sources⁴⁸. One Ottawa municipal council eagerly passed a by-law to fund the new water-works, but irate ratepayers succeeded in having that by-law quashed⁴⁹. Clearly, even after bacteriological discoveries in the late nineteenth century, recognition of the linkage between health and contaminated water supplies was slow in coming⁵⁰. In 1914, Ottawa re-affirmed a preference for water drawn from the Ottawa River⁵¹—and filtered locally, over the more costly scheme to deliver uncontaminated water from Québec. Ontario’s Provincial Board of Health unanimously rejected the city’s choice, observing that the Ottawa River was “beyond any question, a polluted source of supply at all points in the vicinity of the city of Ottawa⁵²”. Accordingly, the board concluded that it would not be consistent with its duty to the citizens of Ottawa or to visitors to the national capital to “countenance the use of water which, after mechanical filtration, constantly requires chlorination, when a pure and adequate supply, requiring no treatment whatever, may be readily procured⁵³”. A re-assessment of Ottawa’s water volume requirements for fire fighting purposes eventually removed the Gatineau lakes plan from contention⁵⁴.

Meanwhile, the distinguished francophone Senator Napoleon Belcourt advocated renewed national action against water pollution. The successful

45. *Id.*, p. 39.

46. *Id.*, p. 18.

47. BINNIE and HOUSTON, *Consultants’ report*, referred to in *Ottawa (City) v. Ontario (Provincial Board of Health)* (1914), 33 O.L.R. 1, 4 (Ont. S.C.).

48. *Ottawa Waterworks Act*, S.Q. 1914, c. 81.

49. *Re Clarey v. City of Ottawa* (1913), 25 O.W.R. 340 (H.C.J.), 5 O.W.N. 370.

50. John H. TAYLOR, “Fire, Disease and Water in Ottawa: An Introduction”, *Urban History Review*, vol. 8, No. 1, June 1979, p. 7.

51. *Ottawa (City) v. Ontario (Provincial Board of Health)*, *supra*, note 47.

52. *Id.*, 7.

53. *Id.*, 8.

54. Chris WARFE, “The Search for Pure Water in Ottawa: 1910-1915”, *Urban History Review*, vol. 8, No. 1, June 1979, p. 90.

earlier ban on sawdust, he suggested as early as 1910, might usefully be supplemented by a further prohibition. Invoking typhoid deaths in Ottawa and elsewhere, he called on parliament to declare that “our noble rivers shall no longer be made the receptacles of the raw sewage of the country⁵⁵”. In 1911, Senator Belcourt re-introduced legislation to implement a prohibition against contaminating navigable water in Canada. Directed at surface waters generally, the proposed protections were wider in scope than most provincial efforts to safeguard sources of water supply.

Belcourt's efforts were intermittently connected with the work of Prime Minister Wilfrid Laurier's national Commission of Conservation. Thus, at the Commission's 1910 Ottawa conference, the engineer T. Aird Murray vigorously promoted national legislative action, arguing that provincial authorities were incapable of safeguarding transboundary watersheds like the Ottawa: “For example the province of Ontario may have the most stringent laws relative to water pollution, and after putting its house in order would be yet dependent upon the action taken by the province of Québec relative to the pollution of the Ottawa river whose banks are interprovincial⁵⁶.”

As a professional, Murray advocated the treatment of sewage, although he acknowledged that “[l]egislation on public health matters, unless understood and conceded by citizens to meet a public want, is of little or no avail⁵⁷.” Alas, Ottawa River communities, like the vast majority of their North American counterparts, chose to rely on the chemical treatment of water supplies—chiefly by means of chlorination—rather than sewage treatment to enhance the quality of municipal water. The strategy subordinated general environmental conditions in favour of an exclusive focus on public health.

A widespread preference for water treatment over sewage treatment, together with the economic constraints of the depression and wartime delayed development of water protection facilities. As concern mounted following World War II, successive investigations identified areas experiencing “water quality impairment” in a sixty mile stretch downstream from

55. CANADA, *Senate Debates*, 2nd sess., 14th Parl., 2 March 1910, “Protection des eaux navigables. Bill. Deuxième lecture”, p. 349 (Napoleon Belcourt).

56. COMMISSION OF CONSERVATION, COMMITTEE ON PUBLIC HEALTH, *The Prevention of the Pollution of Canadian Surface Waters*, by T. Aird MURRAY, Ottawa, Lowe-Martin, 1912, p. 7.

57. *Id.*, p. 23 and 24.

Temiscaming to Deux Rivières and in the eighty mile section of the river from Ottawa-Hull down to the Lake of Two Mountains⁵⁸.

Not until 1963 did Ottawa's Green's Creek sewage treatment facility commence operations, even then offering only primary treatment. By the time of a comprehensive watershed survey later in the decade, a few communities on the Ontario side, (not including the nation's capital,) had introduced secondary treatment. Québec communities, including Hull, Gatineau and Pointe Gatineau, generally disregarded sewage treatment in this era⁵⁹. Instead, in conjunction with the formation of the National Capital Commission in the 1950s, an interceptor sewer proposal for Québec communities encompassed within the proposed "Greenbelt" was formulated in 1949 and finally agreed to in 1958⁶⁰.

As the twentieth century closed, the Ottawa River was the second largest overall recipient of sewage discharge in Ontario with 9 percent of total provincial discharges from sewage treatment plants. On a national basis, Ottawa-Carleton's STP was second only to Toronto's Ashbridge's Bay facility as a source of ammonia releases to water⁶¹. This disheartening record was established several years before notorious mishaps that saw vast quantities of untreated sewage pour into the river. About 764 million litres were discharged in August 2006, and not reported to provincial officials, resulting in significant municipal liability and extended inter-governmental effort to restore river quality⁶². Operational problems have

58. The principal reports include QUÉBEC ANTI-POLLUTION LEAGUE, *Rapport sur la pollution de la rivière Ottawa et de ses principaux tributaires entre Ottawa-Hull et l'île de Montréal en 1954*, by Lucien PICHÉ, Montréal, Fédération des Associations de chasse et de pêche du Québec, Association de la province de Québec pour la protection du poisson et du gibier, 1954; ONTARIO DEPARTMENT OF HEALTH, *Report on Ottawa River and Tributaries*, 1956 and QUÉBEC WATER BOARD, *Rapport sur l'État des Eaux de la Rivière Outaouais*, 1965. These are summarized in the Ottawa River Basin, *supra*, note 37, p. 84.

59. *Id.*, p. 27-31.

60. C.J. BOND, "Degradation of the Ottawa River", in POLLUTION PROBE, *Proceedings of the Ottawa River Conference*, held at Carleton University, 12-13 June 1970, Ottawa, Pollution Probe, 1971, p. 7, at page 14.

61. ENVIRONMENTAL COMMISSIONER OF ONTARIO, *2002-2003 Annual Report. Thinking Beyond the Near and Now*, Toronto, November 2003, p. 36, 38 and 41, [Online], [www.eco.on.ca/eng/uploads/eng_pdfs/ar2002.pdf] (22 June 2010).

62. Dianne SAXE, "\$450,000 Fine for City of Ottawa Sewage Spill", *Environmental Law and Litigation*, 14 October 2008, [Online], [envirolaw.com/450000-fine-for-city-of-ottawa-sewage-spill] (22 June 2010); Patrick DARE, "O'Brien Seeks NCC's Help to Clean up Ottawa River; Mayor Asks Commission to Include Waterway on Inter-governmental Meeting", *Ottawa Citizen*, 20 August 2008, p. D5; Patrick DARE, "Baird Backs River Cleanup; Minister Earmarks \$9.3M for Upgrades to Sewer System", *Ottawa Citizen*, 13 June 2009, p. C5.

persisted⁶³, leading in 2010 to new commitments to address the systemic shortcomings and to alleviate the apprehension of neighbouring communities downstream⁶⁴.

Land-based activity such as agriculture also has significant potential to undermine water quality as a consequence of the use of chemical pesticides and fertilizers, or as a result of the run-off of organic materials from livestock operations conducted in or near riparian zones. Smaller waterways, tributary to the Ottawa, with the South Nation as a prime example, have deteriorated dramatically from concentrated livestock activity that has resulted in particularly high nutrient loads, especially in combination with effluent outflows from small scale sewage treatment facilities and lagoons. The challenges along this particular waterway are longstanding⁶⁵.

The proliferation of residential sub-divisions, golf courses and other activities along the Ottawa or tributary waterways have also posed threats and challenges, both from the perspective of water quality within the river and to the birds and other wildlife that would otherwise frequent the banks and wetlands. These are all contributors to the industrial and urban transformation of the overall river system although they are ordinarily addressed in isolation within the legal system.

4 The Emergence of the Watershed Framework

Intermittent litigation and periodic episodes of prosecutorial effort to forestall degradation of the Ottawa River in the late nineteenth century were succeeded by a more sustained program of public health inspections. These efforts were then supplemented by numerous public inquiries into the condition of the waterway dating from the mid-twentieth century, albeit with limited results from a law reform perspective.

While finding conditions generally quite good, a 1947 report on the Ottawa River Drainage Basin, one of Canada's "industrial waters," emphasized that this situation would continue "only if deforestation and pollution of the watershed is prevented and if means are taken to protect the

63. Patrick DARE, "System Foul-up Sees Raw Sewage Dumped into Ottawa River", *Ottawa Citizen*, 1 August 2009, p. C1.

64. OTTAWA RIVER ACTION PLAN, [Online], [www.ottawa.ca/residents/waterwaste/river_action/index_en.html] (22 June 2010).

65. ONTARIO, THE WALKERTON INQUIRY, *Water Supply and Sewage Infrastructure in Ontario, 1880-1990s: Legal and Institutional Aspects of Public Health and Environmental History*, by Jamie BENIDICKSON, Commissioned Paper No. 1, Toronto, Queen's Printer for Ontario, 2002, p. 60, [Online], [ozone.scholarsportal.info/bitstream/1873/7663/1/10294043.pdf] (22 June 2010).

quality of the water as population and industrial activity within the area increases". At the time of the survey, "waste disposal to the river appears to be counter-balanced in many cases by the adequate flow of a relatively pure water from heavily wooded, sparsely populated areas⁶⁶". The integral relationship between water quality and land-based activity that had eluded Sir John A. Macdonald was on the radar screen — barely — and even bolstered with a call for prevention and protection rather than remediation.

By 1961, however, the Chair of Québec's Water Purification Board expressed profound apprehension. "Are we going to let the water deteriorate to a point where the Ottawa River cannot be approached safely?" asked Guy Prévost, much as T. Aird Murray had asked in the context of the Commission of Conservation investigations half a century before⁶⁷. Pursuant to an announcement by the Premiers of Québec and Ontario in August 1967, the Ontario Water Resources Commission and the Québec Water Board collaborated in a 1971 study of threats to water quality: "The severe pollution pressures that result from the discharge of inadequately treated municipal and industrial wastes presently threaten to destroy the water quality of the Ottawa River if permitted to continue⁶⁸."

The 1971 joint Ontario-Québec study advanced several noteworthy recommendations. It urged, in particular, that "responsibility for demonstrating that a waste effluent is harmless to water uses in the concentrations to be found in the receiving water rests with those producing the discharge", and called for all wastes to receive "best practicable treatment or control consistent with the water quality standards⁶⁹".

Numerous individual initiatives and decisions along these and related lines have subsequently been observed within the watershed. For example, an important decision on the allocation of financial liability for cleaning up environmental damage arose in connection with the legacy of a regional woolen mill, the Appletex facility, and its storage ponds⁷⁰. And, along the

66. J.F. THOMAS, "Ottawa River Drainage Basin", in *Water Survey Report No. 2*, Canada Department of Mines and Technical Surveys, Ottawa, 1947-1948, p. 7.

67. G. PRÉVOST, *supra*, note 35, at page 90.

68. Ottawa River Basin, *supra*, note 37, p. 20.

69. *Id.*, p. 7.

70. *Ontario (Ministry of Environment and Energy, Southern Region) v. 724597 Ontario Inc.* (1995), 18 C.E.L.R. (N.S.) 137 (Ont. Ct. of J. (Gen. Div.)) (leave to appeal refused, Ont. C.A., 11-03-1996, M17227).

South Nation River a water quality trading experiment seeks to encourage economically efficient water quality protection measures⁷¹.

"Sound ecological principles" in the formulation of water quality standards were also proposed by the 1971 joint Ontario-Québec study, at approximately the same time that one well-placed observer offered a frank assessment of obstacles confronting anyone who set out to safeguard the Ottawa River: "Costs, jurisdictional problems and divisions of power are [...] but secondary considerations—the by-products of our social attitudes. In this whole question of pollution we are dealing with a *cultural* phenomenon. We have the *technology* and the *wealth* to at least make a good start on beating pollution. But we have no collective commitment⁷²."

The lack of collective agreement on the Ottawa basin was underscored, ironically, by legislation from this era that appeared to embrace opportunities for watershed management. The *Canada Water Act* offered potential to address water quality on a basin-wide level. The overall results however were largely confined to reporting conditions rather than to remedying deterioration, with no discernable reference to the Ottawa⁷³.

Additional opportunities to promote a more ecological and basin-based approach to the Ottawa watershed have also emerged from provincial initiatives and citizen-led organizations. Since 2002, Québec has encouraged watershed or basin-wide planning with citizen participation⁷⁴, and at least the Lièvre and the Gatineau are moving in this direction⁷⁵. Roughly comparable developments are underway in Ontario in connection with drinking water source protection measures introduced after the Walkerton tragedy⁷⁶. At approximately the same time, concerned citizens formalized

71. Ian CAMPBELL, "Toward a National Freshwater Policy Framework", *Horizons. Policy Research Initiative*, vol. 9, No. 1, May 2006, p. 4, at page 7; Dennis O'GRADY and Mary Ann WILSON, "Phosphorus Trading in the South Nation River Watershed, Ontario, Canada", 1999, [Online], [www.envtn.org/uploads/ontario.PDF] (23 June 2010).

72. W.T. PERKS, "Cultural Barriers to Pollution Abatement", in *POLLUTION PROBE*, *supra*, note 60, p. 83, at page 84.

73. *Canada Water Act*, R.S.C. 1985, c. C-11, Parts I and II; Peter H. PEARSE and Frank QUINN, "Recent Developments in Federal Water Policy: One Step Forward, Two Steps Back", *Canadian Water Resources Journal*, vol. 21, No. 4, Winter 1996, p. 329.

74. Catherine CHOQUETTE and Alain LÉTOURNEAU (eds.), *Vers une gouvernance de l'eau au Québec*, Québec, Éditions MultiMondes, 2008. Current proposals by the Economic Institute of Montréal for the export of water from Québec involve increased power production in the upper Ottawa River.

75. COMITÉ DU BASSIN VERSANT DE LA RIVIÈRE DU LIÈVRE, *Protéger l'eau pour la vie!*, [Online], [www.cobali.org] (22 June 2010); AGENCE BASSIN VERSANT DES 7, [Online], [www.comga.org] (22 June 2010).

76. *Clean Water Act*, S.O. 2006, c. 22.

the creation of the Ottawa Riverkeeper, the third Canadian participant in the international Waterkeeper Alliance⁷⁷. A further valiant initiative seeking to promote public awareness and to transcend inter-jurisdictional boundaries on the basis of consolidated information and data bases is the Ottawa Gatineau Watershed Atlas, launched in 2009⁷⁸. And, although remedial authority is not associated with designation under the Canadian Heritage River system, proponents of a designation for the Ottawa River specifically cite a clean environment and healthy ecosystems as direct benefits⁷⁹.

The ultimate objective, watershed-based ecological governance, remains challenging but not unattainable even along heavily-utilized inter-jurisdictional basins such as the Ottawa.

77. OTTAWA RIVERKEEPER, [Online], [www.ottawariverkeeper.ca] (22 June 2010).

78. OTTAWA-GATINEAU WATERSHED ATLAS, [Online], [www.ogwa-hydrog.ca] (22 June 2010).

79. OTTAWA RIVER HERITAGE DESIGNATION COMMITTEE, *A Background Study for Nomination of the Ottawa River Under the Canadian Heritage Rivers System*, QLF Canada, 2005, Section 6.2.1, p. 241, [Online], [ottawariver.org/html/news/whatsnew_e.html] (23 June 2010).